ORIGINAL ARTICLE

Examining the Impact of Social Media Overload on the Academic Performance of Public Medical College Students of Lahore

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ABSTRACT

Objective: This study's objectives were two-fold. First, it examined the direct relationship between social media overload and academic performance. Second, it analyzed the mediating role of anxiety between social media overload and the academic performance of medical students.

Study Design: A cross-sectional study.

Place and Duration of Study: The study was conducted at the Department of Medical Education of Allama Iqbal Medical College, Lahore, Ameer-ud-Din (PGMI) Medical College, Lahore, Services Institute of Medical Sciences, Lahore and Shaikh Khalifa Bin Zayed Al-Nahyan Medical and Dental College Lahore, Pakistan from June 2021 to January 2022.

Methods: Data from 259 medical students were collected using a convenience sampling technique through self-administered questionnaires. The study included medical students from the second to final year of MBBS.

Results: Hayes PROCESS Macro analysis in SPSS showed that social media overload and academic performance were related to one another (β=-0.198, p<0.05) which had significance in statistics. Moreover, mediation analysis revealed a statistically significant and partial mediating role of anxiety between social media overload and academic performance (Indirect Effect = -.0734, p<0.05).

Conclusion: Findings revealed that social media overload directly influenced the academic performance of medical students. Additionally, anxiety as a mediator negatively impacted the relationship between social media overload and academic performance.

Keywords: *Academic Performance, Anxiety, Individual Stressors, Medical Students.*

How to cite this: *Ather MA, Alam RS, Bokhari SQ, Butt A. Examining the Impact of Social Media Overload on the Academic Performance of Medical Students. Life and Science. 2024; 5(2): 160-165. doi: http://doi.org/10.37185/LnS.1.1.446*

Introduction

The world has witnessed enormous growth in information technology, effectively changing how people communicate. The rapid growth of the internet has made social media vital for our lives. Digital in Pakistan reported that as of January 2023, there were 87.35 million people who used the internet in Pakistan. In January 2023, Pakistan had a social media user population of 71.70 million.1 Internet penetration was 36.7%.1 82.1% of Pakistan's overall internet user base, irrespective of age, engaged with at least one social media platform.1 Social media penetration was 17% at that time.[1]

As social media platforms have become available globally, students have started using social media for various tasks. Consequently, compulsive usage of social media results in a new adverse effect known as social media overload and is a subject of interest in different research.[2] People in Pakistan use social media regularly, this includes a significant number of medical students. This has been made possible due to easy access to the internet, which can potentially

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Funding Source: NIL; Conflict of Interest: NIL
Received: July 17, 2023; Revised: Dec 07, 2023
Accepted: Jan 13, 2024

lead to addictive social media usage. Therefore, this study examines the relationship between social media overload and the academic performance of medical students. Furthermore, the role of anxiety as a mediator is also determined.

The study utilizes the stressor strain outcome perspective (SSO) to achieve its research objectives.[3] The hypothesis of this research was grounded in the SSO framework and proposed that anxiety mediates the relationship between social media overload and academic performance. Social media overload, which comprises information overload and social overload is a stressor that leads to anxiety a strain that then subsequently leads to poor academic performance (outcome). Information overload occurs as medical students receive information beyond their ability to process it resulting in exhaustion.[4] Social overload takes place as people attend to an overpowering quantity of social demands placed by contacts.[5,6] Anxiety, resulting from social media overload (information overload and social overload) exerts an increasing psychological strain on the minds of medical students thereby, affecting their capacity to absorb information and social requests, resulting in poor academic performance.[7] Given the potential influence that medical students may wield in our healthcare system in the future, it is essential to take into account their anxiety levels and academic performance.

Methods

Participants and Recruitment

The study adopted a cross-sectional time frame to collect data from public sector medical colleges in Lahore affiliated with the University of Health Sciences (UHS). The institutions included Allama Iqbal Medical College, Ameer-ud-Din (PGMI) Medical College, Services Institute of Medical Sciences, and Shaikh Khalifa Bin Zayed Al-Nahyan Medical and Dental College Lahore, Pakistan from June 2021 to January 2022 after taking approval from Ethical Review Board of Shaikh Zayed Medical Complex Lahore, Pakistan vide letter no: SZMC/IRB/161/2021 held on dated: 29th July 2021.

Participants and Sampling

As we want to test the hypothesis that social media overload is negatively correlated to the academic performance of medical students; we used the formula for sample sizing for linear correlation between variables.

$n = 4 + \{(1.96+1.28)^2 / \ln [(1-0.2)/(1+0.2)]^2\} + 3$

According to previous literature, the correlation between social media overload and academic performance is (r= -0.2). We are taking the significance level as 5%, power of 90%, Z_α as 1.96, ln as the natural logarithm, and $Z_{1-\beta}$ as 1.28. Substituting all values in the formula above we got a sample size of 259 medical students at public medical colleges in Lahore. These 259 medical students were selected based on convenience sampling. Medical Students were recruited from the second year to the fourth year of UHS-recognized Public Medical Colleges.

Data Collection Procedure

A survey research strategy employing a structured questionnaire was used as a data collection tool. The study setting for this study was natural (non-contrived). Furthermore, data was collected with minimum interference from the researcher.

Data Analysis

Assessment to test the hypothesized model was done through SPSS software. To test the hypotheses and to study the results Statistical Package for Social Science, (SPSS. 20) was used. We calculated descriptive analysis, reliability analysis (Cronbach's Alpha), and correlation analysis. Regression analysis to test mediation was performed by using PROCESS Macro by Hayes.

Measures

Social media overload was measured using an 8-item scale.[5,6] To measure academic performance, we employed two methods. Firstly, marks in the form of percentages from the previous professional examination were observed. We categorized marks into six groups (<60%, 60-70%, 70-80%, 80-90%, and >90% marks). Secondly, a 4-item scale for academic performance scale was used.[8] The PROMIS anxiety scale having 8 items was used to measure anxiety levels.[9]

Results

Transformation of raw data into interpretable facts generated descriptive statistics that comprised over mean and standard deviations (Table-1). This treatment of data revealed that the medical students stated poor levels of academic performance (M=

2.15, SD= 0.816). Medical students reported moderate to high levels of social media overload with (M= 3.88, SD= 0.715). The finding reveals that medical students reported higher levels of anxiety with a mean of 3.89 and a standard Deviation of .667) which means they often felt anxious due to social media overload.A Pearson correlation test revealed that social media overload was significantly and negatively correlated with academic performance (r = -.19, *P*<0.05). These findings suggest that due to high social media overload (information overload and social overload), medical students tend to have poor academic performance. Additionally, social media overload was significantly and positively correlated with anxiety (r = .22, *P*<0.05) suggesting that high overload results in higher levels of anxiety. Moreover, anxiety had a negative and significant correlation with academic performance among medical students (r = -0.31, *P*<0.05). This means that when medical students are anxious their academic performance tends to suffer. Careful tabulation of facts and figures generated the correlation matrix shown in Table-2.

Table-1: Descriptive Analysis

Variables	Minimum	Maximum	Mean	SD
Social Media Overload	1	5	3.88	.72
Anxiety	1	5	3.89	.67
Academic Performance	1	5	2.15	.82

To test for mediation, we adopted the Hayes PROCESS Macro model 4.[10] Academic performance was regressed on total social media overload which produced an R2 of 0.03 which means a variation of 3.9% in academic performance was explicated by social media overload. The result indicated that the effect of social media overload on academic performance was statistically significant (β = -.19, *p*< 0.05) and its coefficient was negative which indicated that a higher degree of social media overload leads to a lower degree of academic performance among medical students. Next, anxiety was regressed on social media overload which produced R2 of 0.05 which reveals a variation of 5.3% in anxiety was explained by social media overload. The effect of social media overload on anxiety was also statistically significant (β = 0.22, *p*< 0.05) and a positive coefficient indicated that a higher degree of social media overload leads to a higher degree of anxiety among medical students. Additionally, academic performance was regressed on anxiety which produced an R2 of 0.09 which reveals that a variation of 9.7% in academic performance was explained by the independent variable (anxiety). The effect of anxiety on academic performance was statistically significant (β = -0.31, *p*< 0.05) and a negative coefficient indicated that a higher degree of anxiety leads to a lower degree of academic performance among medical students.

Table-2: Correlation and Cronbach Alpha

Variables	Social Media Overload	Anxiety	Academic Performance
Social Media Overload	0.90		
Anxiety	.22**	0.82	
Academic Performance	-.19**	-.31**	0.81

*Note: **P < 0.05, Values in diagonal are the Cronbach alpha values depicting reliabilities of the scales*

Finally, to prove mediation, we controlled anxiety. The effect of anxiety on academic performance was statistically significant (β = -0.31, *p*< 0.05) and a negative coefficient indicated that a higher degree of anxiety leads to a lower degree of academic performance among medical students. To sum up, anxiety significantly predicts academic performance among medical students. Moving towards this, social

media overload and anxiety were added together to see if they significantly predict academic performance. The results revealed that both social media overload and anxiety are significant predictors of academic performance (β = -.28, p< 0.05 and β = -0.13, p< 0.05) respectively. As the regression coefficient of association among social media overload and academic performance while controlling for mediating variable was still statistically significant this analysis revealed that anxiety partially mediated the relationship between social media overload and academic performance (Table-3).

Table-3: Mediated Regression Analysis Predicting Academic Performance

Variable	*β*	SE	R^2	*p*-value
Total Effect Model				
Social Media Overload Predicts Academic Performance				
Social media overload	-0.19**	.070	0.03	0.00
Dependent Variable: Academic performance				
Path a				
Social Media Overload Predicts Anxiety				
Social media overload	0.22**	0.05	0.05	0.00
Dependent Variable: Anxiety				
Path b				
Anxiety Predicts Academic Performance				
Anxiety	-0.31**	0.07	0.09	0.00
Dependent Variable: Academic performance				
Indirect Effect Model				
Social media overload predicts Anxiety, which in turn predicts Academic performance				
Anxiety	-0.31**	0.07	0.09	0.00
Social media overload	-0.28**	0.07	0.11	0.00
Anxiety	-0.13**	0.06		0.00
Dependent Variable: Academic performance				

*Note: **P< 0.05 (2-Tailed)*

Discussion

This research sheds light on the significant direct relationship existing between social media overload and academic performance, corroborating prior research findings. There are four adverse outcomes related to social network overload: poor academic performance, emotional disturbances, strained relationships, and health problems.[11] Concurrently, the detrimental effects of compulsive social media use include inadequate sleep, procrastination, distraction, poor time management, and diminished academic performance.[12] Our research shows that getting too much information and being overwhelmed by social interactions on social media can make people anxious. Previous research has also found the role of social media overload and informational overload as stressors influencing anxiety among medical students.[13] This finding aligns with the assertion that constant information demands act as distractors, leading to heightened anxiety levels.[14]

Moreover, our findings are consistent on social networking sites (SNSs), revealing that exhaustion resulting from compulsive SNS use is significantly influenced by information overload and social overload.[15] Additionally, our research highlights that constantly feeling the need to respond to social requests can use up mental energy and make you feel mentally drained. Moreover, the study establishes the detrimental impact of anxiety on the academic performance of medical college students resonating with the study demonstrating the substantial impact of stress on academic functioning.[16] Lastly, the findings of previous research also suggest that anxiety impairs students' ability to concentrate on tasks, thereby negatively affecting their academic performance.[17,18]

Like any other research, this study is also not without limitations. First, the time horizon of this study was cross-sectional which prevented the capability to

conclude interconnection among variables as the data was collected at a single point in time. Future studies can incorporate longitudinal data to capture better interconnection among study variables. Second, the results of this study may not be generalized because the 259 medical students surveyed only belong to one city (Lahore). Future research can be conducted in a more extensive manner considering public and private medical colleges of other cities of Pakistan. More diverse data can make the findings of this study more accurate.

Conclusion

To conclude, the stressor–strain–outcome model is supported through our results. Social media overload was found to influence the academic performance of medical students negatively. The findings also highlight the mediating role of anxiety through which social media overload negatively impacts academic performance. Excessive exposure to social media leads to negative effects like overload, stress, and fatigue, which must be properly researched to gain a more sensible view of social media usage.

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Authors Contribution

MAA: Idea conception, study designing, data analysis, results and interpretation, manuscript writing, and proofreading

RSA: Data collection, data analysis, results and interpretation, manuscript writing, and proofreading

SQB: Study designing, manuscript writing, and proofreading

AB: Study design, data collection